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ABSTRACT

The growth in computing power available to institutional researchers today is more than matched by the increase in the demand for information. A significant part of this demand involves minor variations of a few routine questions. Nearly all administrators from the vice president to the department chairman want information about "their" students and "their" faculty. An approach is described for the support of end-user computing by enlisting and training administrative assistants and technical staff in the various administrative offices to produce routine and supplemental reports for their offices. The essential requirements for developing a user community are considered to be: a well-documents, accessible university database with data items useful in decision-making; administrative assistants or technicians with computer skills or who are willing to learn; and an adequate user support system. Topics discussed include the need to provide trainees with documentation, characteristics of report-writing programs suitable for end users, and the need for user support. With this approach, the central institutional research office is viewed as taking on the role of trainers and consultants for functional "institutional researchers" distributed across the campus. Contains 9 references. (Author/KM)

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Developing a User Community

A Paper Presentation at the 1988 AIR Forum

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Teresa Karolewski
Chair and Editor
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Abstract

The growth in computing power available to institutional researchers today is more than matched by the increase in the demand for information. A significant part of this demand involves minor variations of a few routine questions. Nearly all administrators from the vice president to the department chairman want information about "their" students and "their" faculty. This paper presents ways to support end user computing by enlisting and training administrative assistants and technical staff in the various administrative offices to produce routine and supplemental reports for their offices. The central institutional research office takes on the role of trainers and consultants for functional "institutional researchers" distributed across the campus.

Introduction

A combination of limited central information services support and the latest technologies has produced a proliferation of self-directed users on campus who are accessing existing data bases or creating their own data bases and producing their own reports and analyses. Unfortunately, due to the lack of computing center support, adequately documented data bases, and an inappropriate use of the raw data, untrained users produce nicely formatted reports that are grossly inaccurate.

Institutional researchers respond to the informational needs of the institution and to a multitude of *ad hoc* information requests from outside the institution. Even though mainframe and personal computers have become more powerful and more readily available to an increasing number of universities, institutional researchers still find it difficult to respond to the many minor variations of the same questions pertaining to the university.

Since training and support are sorely needed and are not being supplied elsewhere, institutional researchers can offer a solution to the growing information needs problem. They can train administrative assistants in the various offices how to access, interpret, and produce accurate reports using existing data bases. In doing so, the institutional research team assumes the responsibility of creating a "community of users" and providing a support system for this community. With an active user community producing routine internal

reports, institutional researchers will be able to focus on more complex tasks and analyses.

The Current Situation

Many institutions continue to rely upon central computer centers which have the dual responsibility of designing and maintaining all university data bases and serving as information services centers for the university. The increasing number of information requests have overtaxed the centers' limited staff and resources. Much has been written about the movement toward decentralization and distributed access to administrative systems (Carson (1987), McKinney, Schott, Teeter, and Mannering (1987), and Staman (1987)). Some institutions have distributed the authority, responsibility, and accountability for university data bases to the stewards, or data custodians, who are directly responsible for the integrity and content of the assigned data bases. Other institutions have retained the centrally controlled data bases but have distributed administrative information systems access to administrative offices.

McLaughlin, McLaughlin, and Howard (1987) reported that institutions are being forced to reexamine and, in some cases, to develop data-use policies and procedures that affect access, security, and end-user ease in obtaining information. The computer revolution on campus has caused shifts in administrative styles and responsibilities. According to Fleit (1986), some institutions have chosen a computer "czar" to direct the policies and procedures

associated with distributed or decentralized computing. Hall (1987) reported that problems, such as outdated, cumbersome software and hardware, an overworked or unreliable system, and inadequate resources for staff training, have caused frustration, irritation, and disillusionment with administrative systems.

Irrespective of whether the management of administrative systems is centralized or decentralized or whether these systems are distributed or not, administrators and their staffs are becoming aware of the rapidly changing technologies and have become our newest computer literate users, utilizing personal computers for, among other things, communications and desktop computing. Gleason and Moldovan (1987) and McLaughlin *et al.* (1987) reported that while many administrative offices do not have their own data processing staffs, others are directly accessing institutional data bases, as well as creating their own specific data bases.

A natural desire of administrators to have timely, useful information combined with limited central computing support provides the impetus for organizing a user community. If an administrator has to depend solely upon a central support facility for information, a request can be misinterpreted or even lost in the filtering-down process. The information as originally requested may not be available, it may surface in a form not usable for decision-making, or it may arrive too late to be useful. It may also present evidence which conflicts with the perception of the central administration. Accuracy (consistency) is needed in external reports so that the institution

maintains its credibility, but there is no reason why a computer literate user cannot manipulate data for internal decision-making purposes.

In a distributed computing environment, the central institutional research office can serve as a network information center, an important link between the central computing center, administrative computing, systems administration, data administration, and executive administration. As a repository for information concerning systems, policies and procedures, and technology changes, the institutional research office can continue to provide the traditional reports and analyses for decision-making but, more importantly, it can also provide the resources needed to create, train, and support a user community. The essential requirements for a user community are:

- a well-documented, accessible university data base, such as a census date reporting file that contains data items useful for decision-making;
- administrative assistants or technicians who are willing to learn new technical skills or who already possess some computer skills; and
- an adequate support system for these users.

Data Bases and Information Sources

University data bases are comprised of dynamic and static datasets. The dynamic data bases are usually hierarchical, complex structures that require special access techniques for data retrieval. These data bases are dynamic in the sense that data values change with every update; an inquiry can produce

varying results each time it is initiated. The data bases often lack external documentation, making accurate interpretations of data relationships difficult for the occasional users. Written external documentation is dysfunctional to the data base stewards because they deal intimately with the data on a continuing basis and have no need for manuals. For the occasional users, however, written documentation is essential to clarify the content and anomalies of the data, and to avoid misinterpretations and erroneous conclusions.

Currently, some administrative offices can access dynamic data bases via on-line inquiries or by using fourth generation languages. This type of access is adequate for single inquiries or simple report summaries but does not meet all of the administrative informational needs.

An alternative to the dynamic data bases is a static data base, such as a student enrollment reporting file. The data are extracted from the live data bases on a specified date and are used for official enrollment reporting. The reporting file is produced by the central institutional research office, a data custodian office, or a central computing center. The data items extracted, or frozen, from the dynamic data bases are checked for validity and consistency and a reporting file, or data base, is created. Using available software and hardware, institutional researchers utilize this data base not only to produce standard reports but also to respond to the many requests for information from within and outside the university.

Staman (1987) stated that a data security system is essential to protecting the dynamic and static data bases from unauthorized access. An audit trail and authorization process should be instituted and controlled by the central administration. Vital issues, such as security, ownership, confidentiality, and privacy, however, should not limit administrative access to university data bases. Policy statements and guidelines for management and control of data should be developed and procedures implemented that will allow access to data bases for administrative users who have a "need to know." The policies should promote cooperation between the computing center and the institutional research office to build and improve user training and support services.

Muffo and Snizek (1987) cautioned against making data bases available to those not involved in gathering the data without extensive documentation being made available. They recommended making users aware of the pros and cons of using data that are frozen in time to head off potential problems. There is a great variance between data generated from a static data base and similar data from a dynamic data base. Policies need to be formulated to address the issues of who assumes responsibility for data produced by the users and who releases "official" figures. A potential danger exists of an administrative office going public with its internally derived figures.

Recruiting and Training Users

Administrative or technical assistants are ideal subjects for the user community because, as part of their jobs, they often have developed computer

skills and are at ease using computers. They know what the data look like and how it can be manipulated. They also have the advantage of long term continuity. With a certain level of training and support, members of the user community can develop a sophistication that parallels the technology and tools that are made available to them.

Training student assistants to access a data base to produce reports is a short-term solution but does not improve office skills in the long run. Although students usually have some computer training and often have programming experience, there may be inappropriate data for them to access. Students graduate or return to the classroom and leave no one in the office who is trained to replace them. If there is a frequent turnover of users, limited resources are focused on training new users rather than improving the skills of the user community.

Training begins with providing external documentation for the reporting file to users who have received authorization to access the file. As part of the user documentation, all of the data items on the reporting file are identified and clarified and the relationships between data items are explained whenever possible. Translate tables, formats, and a user manual are helpful to guide new users through the sequence of steps toward producing desired reports.

In addition to the documentation, users begin with a single program that produces a report for an administrator. The program should be written and internally documented in a fourth generation language or a language

supported by the computing facility and by the institutional research office. If developed locally, the pre-written program should contain embedded documentation that resembles a cookbook recipe, clearly outlining the purpose of the program, listing every data item of interest, and stating the selection criteria. The users will have a lot of questions when they begin executing the program. To help prevent the users from producing erroneous reports, sample data records should be printed to show some of the raw data. In addition, simple frequencies should be output to show the range of values present in the data. Users should only have to change the file identifiers and one or two selection criteria each time the program is executed.

When a program is provided to the users, one-on-one assistance should be available for the first few times the users execute it. As the users become comfortable with the program, additional programs are provided. The users quickly become familiar with the programs and can make minor changes to expand the reports or to select a different subpopulation for the reports. The users must be warned, however, that automated software does not replace sound reasoning and careful reading. Figures should be checked against standard enrollment reports to verify the results.

User Support

An information services support system involves communicating an understanding of data bases, computer languages, and institutional research functions to the user community. User support must be of high quality and

responsive. Support includes periodic meetings to keep users informed of software and hardware changes, new systems features, and their uses. An active network promotes communication among administrative users and provides uniformity and consistency in internal reporting. Procedures are established to correct errors in data and assure data integrity. Problems and frustrations are discussed and solutions are sought as a cohesive unit. Support from the computing center is vital to the continuing success of a user community.

Based upon recurring requests from administrative offices, standard prototype programs usually have been developed by institutional researchers and can easily be adapted for the administrative user. After the initial documentation, software, and reporting file are developed, one staff professional can readily train and support many users. Barring major systems changes or dysfunctions, support includes only periodic maintenance to the programs and documentation when the programs do not execute.

Carson (1987) and Staman (1987) emphasized that if administrative goals include increasing productivity, controlling costs, increasing services, and providing administrators with powerful decision-making tools, then administrators should provide leadership in developing effective methods of using and controlling the new technologies. Policies that control access, security, and use of data should also address means of providing training, consulting, and other user support requirements. May (1988) reported that many of the users are becoming "doers." He suggested that there are "users" and there are

"abusers" and that if we do not carefully train and support the former, we will likely end up with the latter.

Summary

The rapid technological advances and the inability of information services support to supply the ever-increasing demand for information are a growing problem at many institutions. As many institutions decentralize their computing facilities and many more distribute access to administrative information systems, attention must be given not only to the policies, procedures, and standards that must be implemented regarding security and data use, but also to providing the resources that are needed to train and support the administrative computer user.

Information, user training, and support should be consolidated for efficiency. The establishment of a network center in the institutional research office can provide administrators with information for decision-making as well as for systems and technologies. University-wide data bases suitable for access by administrative users should be developed along with accompanying documentation, software, and user consulting services. All offices would have access to the same information. All administrative users would be trained in how to access and correctly interpret the data retrieved for decision-making. The community of trained users would be in a position to plan for change rather than react to change.

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